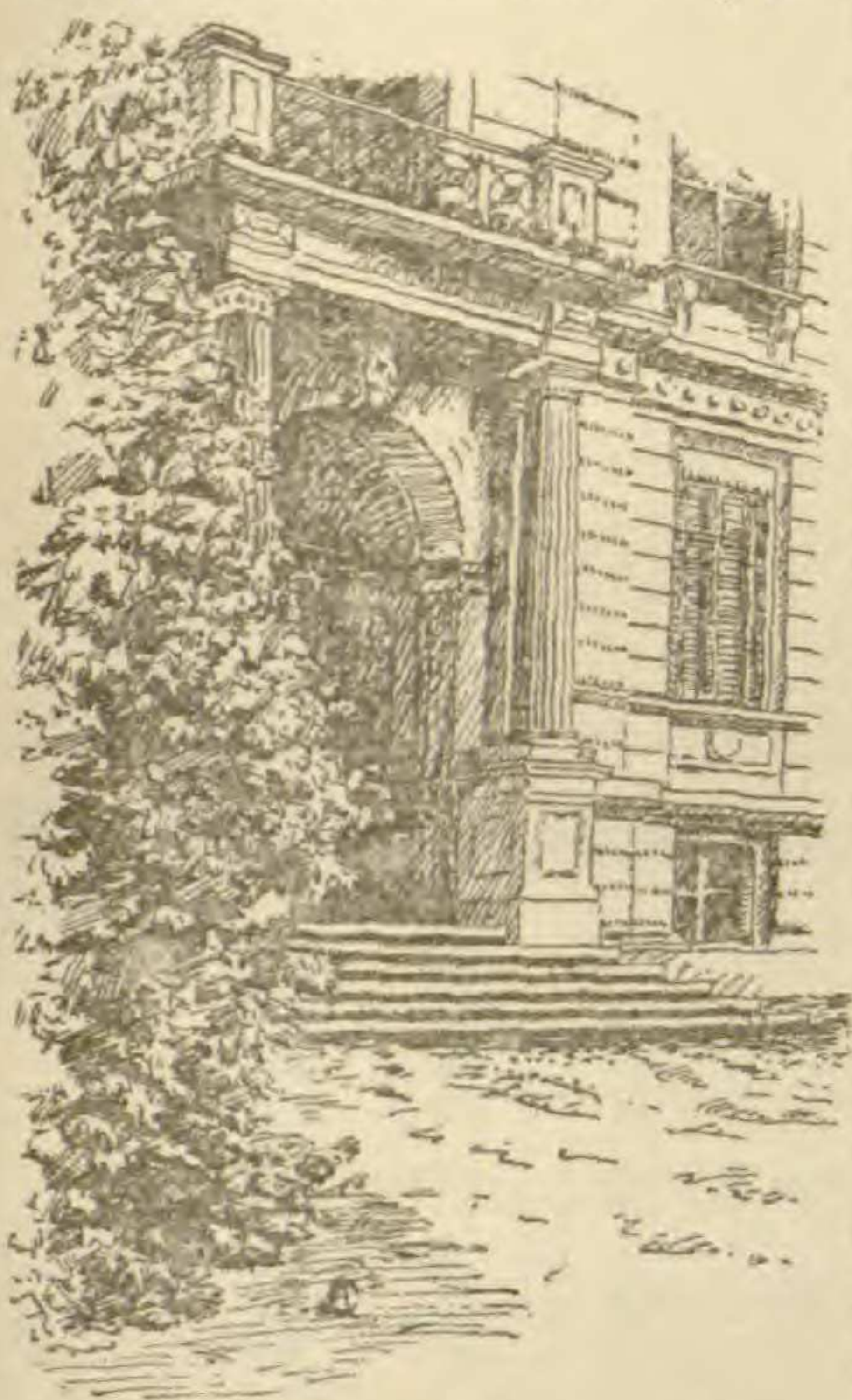


Strassburg and its botanical laboratory.

WILLIAM R. DUDLEY.

The city of Strassburg contains two widely different quarters; first, the old city, full of narrow streets and quaint houses, whose crown and glory is the great cathedral near its center; second, the new quarter, added to the city by the extension of its walls after the German occupation in 1871, and containing wholly modern buildings. Among the latter are the new imperial palace and the great quadrangle of the new "Kaiser Wilhelm" University. A considerable area of this new quarter is still unoccupied.



MAIN ENTRANCE TO LABORATORY,
NORTH SIDE.

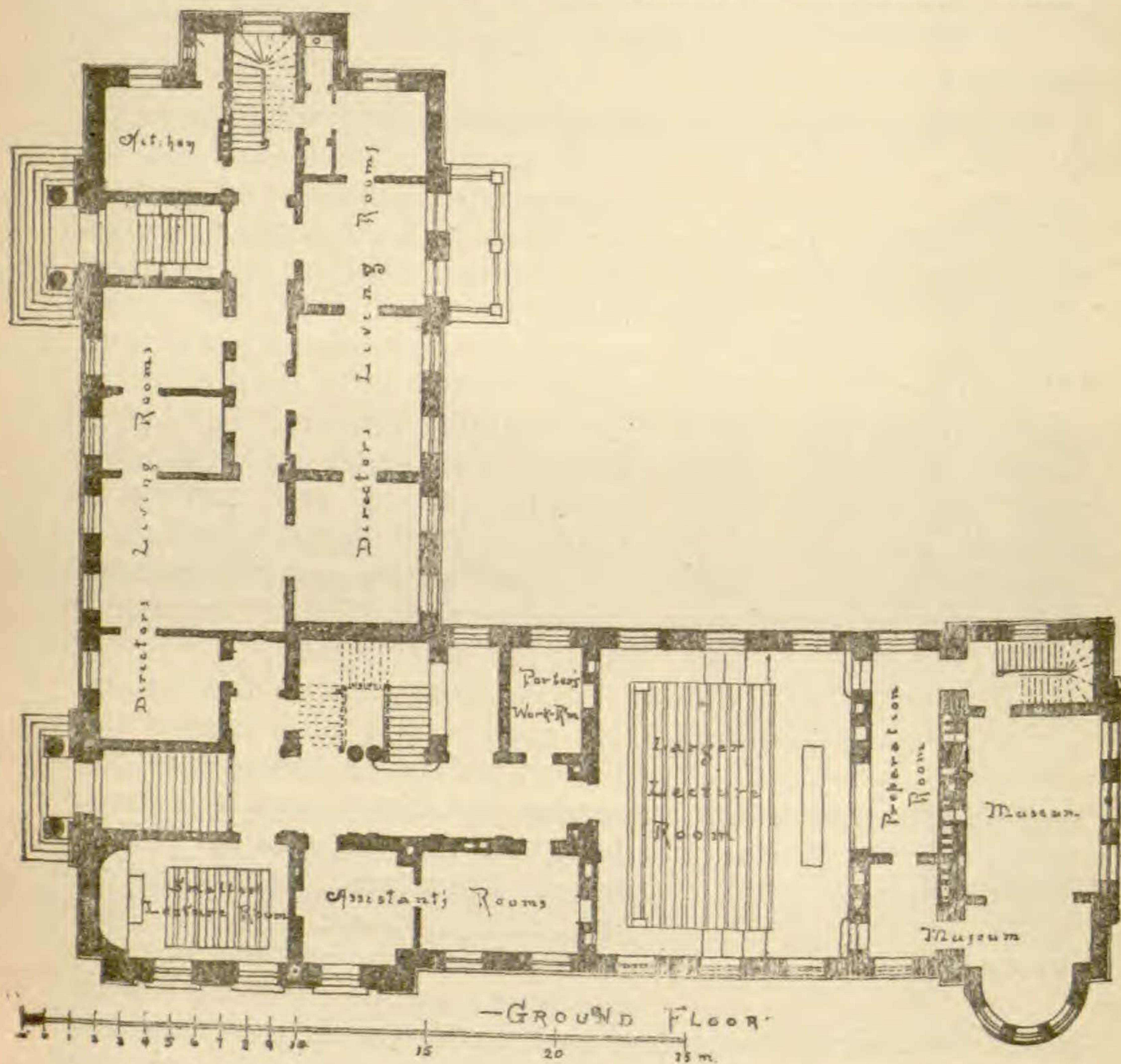
Extending across the end of the quadrangle and facing the distant palace is the great University building, 400 feet long, designed for lectures in philosophy, literature, mathematics, law, theology, etc. In the rear on the left side is the Chemical Institute; on the right the Physi-

cal and Botanical Institutes, and farther back the Observatory. Between the Botanical Institute and the Observatory lies the Botanical Garden with its greenhouses, Victoria House and artificial pond. On a neighboring quadrangle other buildings for science are being erected; in another part of the city are the numerous buildings of the Medical School, while the Library of over 600,000 volumes occupies the old Bishop's Palace near the cathedral.

It is rare to find the buildings of German universities grouped together in this altogether American fashion, or making such an imposing display as do these fine examples on the quadrangle of the "German Renaissance" style of

architecture. The structures are of a light-gray stone, often with stone staircases and corridors, and are fire-proof throughout.

A ground plan of two floors of the Botanical Institute, the ground floor and the story above the latter, called on the continent the "first floor," accompanies this sketch. These



are from tracings of drawings kindly furnished me by Prof. Zacharias and Dr. Jost, of the Institute, and deserve a careful inspection by all interested in laboratory arrangements.

Among the peculiar features, it will be noticed that a considerable portion of the building is reserved as a residence for the Director and his family, and that two rooms are allotted to the Director's assistant, commonly a young man who has recently made his doctorate. The writer also has plans of the basement and attic stories; and these show rooms for the porter and his family, and for that excellent

servant of German laboratories, the "Diener," or laboratory porter or waiter. To group all these people in the "Institute" building is a common practice in German universities.

The "Preparation Room," as it seemed best to call it on the plan, is one used in preparing for lectures, and is convenient for carrying on certain work in connection with the illustrative museum (or "Lehrsammlung") in the rear.

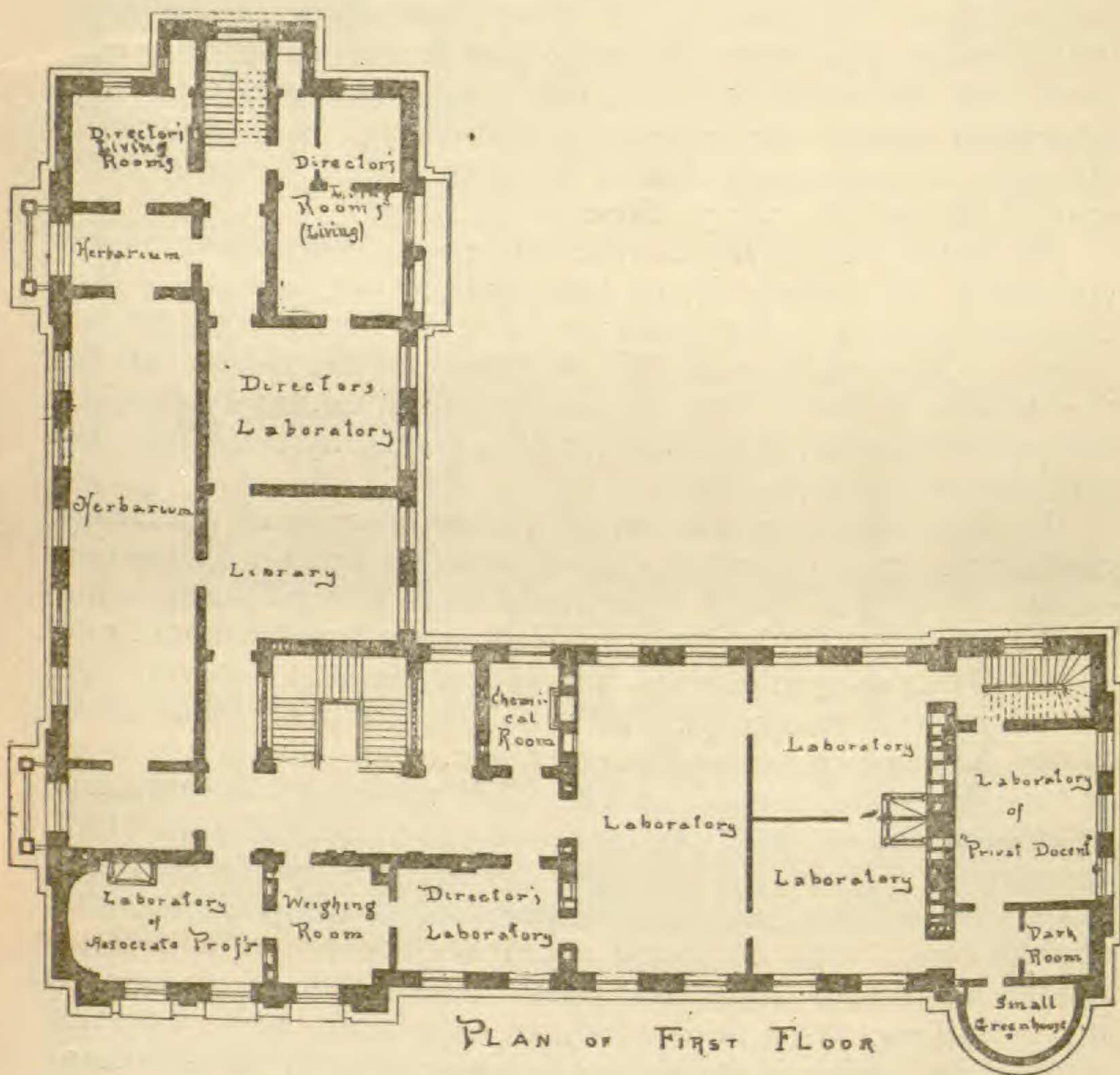
The little greenhouse on the first floor is of the greatest convenience. Sections of its glass roof can be raised, and, if necessary, a platform, bearing jars or pots containing cultures, can be rolled out on a track into the open air. The laboratory rooms are especially interesting, as representing the most recent expression of the mature judgment of Germany's ablest laboratory director, de Bary.

No doubt the architect who designed the building is accountable for cutting it up into symmetrical squares; any German architect who failed in this would be sure to die unhappy. Nevertheless, for the sequence of the rooms and for the details, de Bary was responsible, and, taking everything into consideration, it is considered in Germany their best single laboratory for botany.

Its chief characteristics are the abundance of all necessary appliances and apparatus, cleanliness and orderly disposition of all its supplies, good light from huge windows and white wall-surfaces. Wall-cases are numerous and the contained glass-ware, reagents, etc., nicely arranged. Drawers are abundant, this one containing only reagent tubes, that glass plates, another pipettes, burettes, etc., etc. Running water is convenient, of course, and distilled water and three grades of alcohol where they can be readily obtained by students if necessary. There are several sterilizing boxes in the large laboratories; also constant-temperature boxes provided with thermostats. The chemical room is provided with a hood for fumes and for the steam generated by the steam sterilizing cylinders. Gas is provided at each table, and a separate room is set apart for delicate instruments, such as balances. Indeed the association and dissociation of rooms and apparatus, the conveniences, the absence of unnecessary things and showy effects, indicate the intelligence and discernment of a worker and a master.

The tables are broad, very heavy and designed so as to prevent warping or seaming. They are convenient for two beginners or a single special student. Each person is provided, at the outset, with about a dozen common reagents

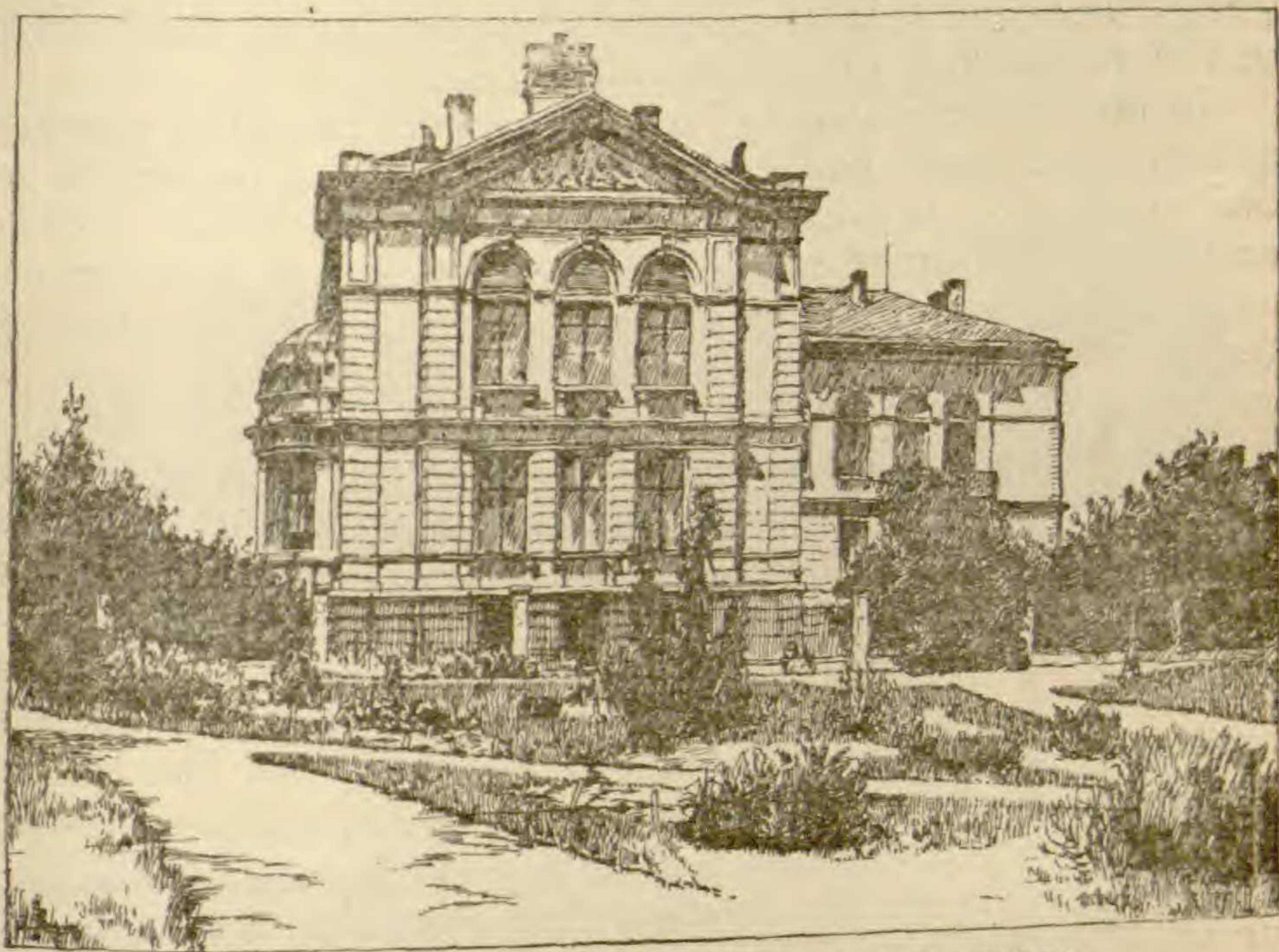
and fluids. The microscopes for laboratory use are chiefly Hartnack. Most of the private microscopes in the laboratory at the time I was there were from Seibert, an excellent Wetzlar manufacturer, not well known in America; and one or two from Zeiss. The stock of reagents in the cases is large, and, if necessary, new ones will be cheerfully ordered. The University requires of special students working every



day in the laboratory, a payment of fifteen dollars, which covers all necessary expenses.

Strassburg University had about 1000 students during the winter semester of 1887-'88, and 104 professors, privat-docents and assistants. It is, therefore, neither one of the largest, nor one of the smallest, of Germany's twenty-one universities.

The Botanical Laboratory had six advanced and five beginning students, and I do not think the number was affected by de Bary's illness. To instruct or counsel these were four instructors: The professor; the associate professor, Dr. Zacharias; the privat-docent, Dr. Wortman; and the assistant, Dr. Jost—all contributors, in a greater or less degree, to science, and of course well-trained men. At least three of the advanced students were working quite independently during de Bary's illness, although it was the latter's custom to inquire nearly every day after the work of the advanced students, when he was in health. But the German govern-



BOTANICAL LABORATORY, FROM THE GARDEN. SOUTH SIDE.

ment, which employs and pays these instructors, is not afflicted with that particular kind of malaria which enters into the management of almost every American institution, and gives it alternate chills and fever over fall and rise in numbers. Numbers are a matter of indifference to it. A very distinguished German professor once said to me: "The truth is, we teach whatever we please, we do as much or as little as we please, and the government does not interfere with us." Yet these men teach enthusiastically, and accomplish in scientific research ten times as much as the American professor, who is "personally conducted" by a whole board of trustees. The German government *does* "person-

ally conduct," however, in certain very important matters. In the first place it provides a suitable corps of assistants, and makes it sure, therefore, that the professor has *not* too great a burden of teaching on his hands. It provides ample appropriations; it appoints its professors for merit, and it sends up its students from the secondary schools with an excellent and uniform training.

The advanced students were mostly engaged in bacteriological investigations, although one was working out certain biological questions of fern development. Professor Zacharias was engaged in histological work, Dr. Wortman in physiology, and Dr. Jost completed a paper during the winter on the morphology of certain mistletoes.

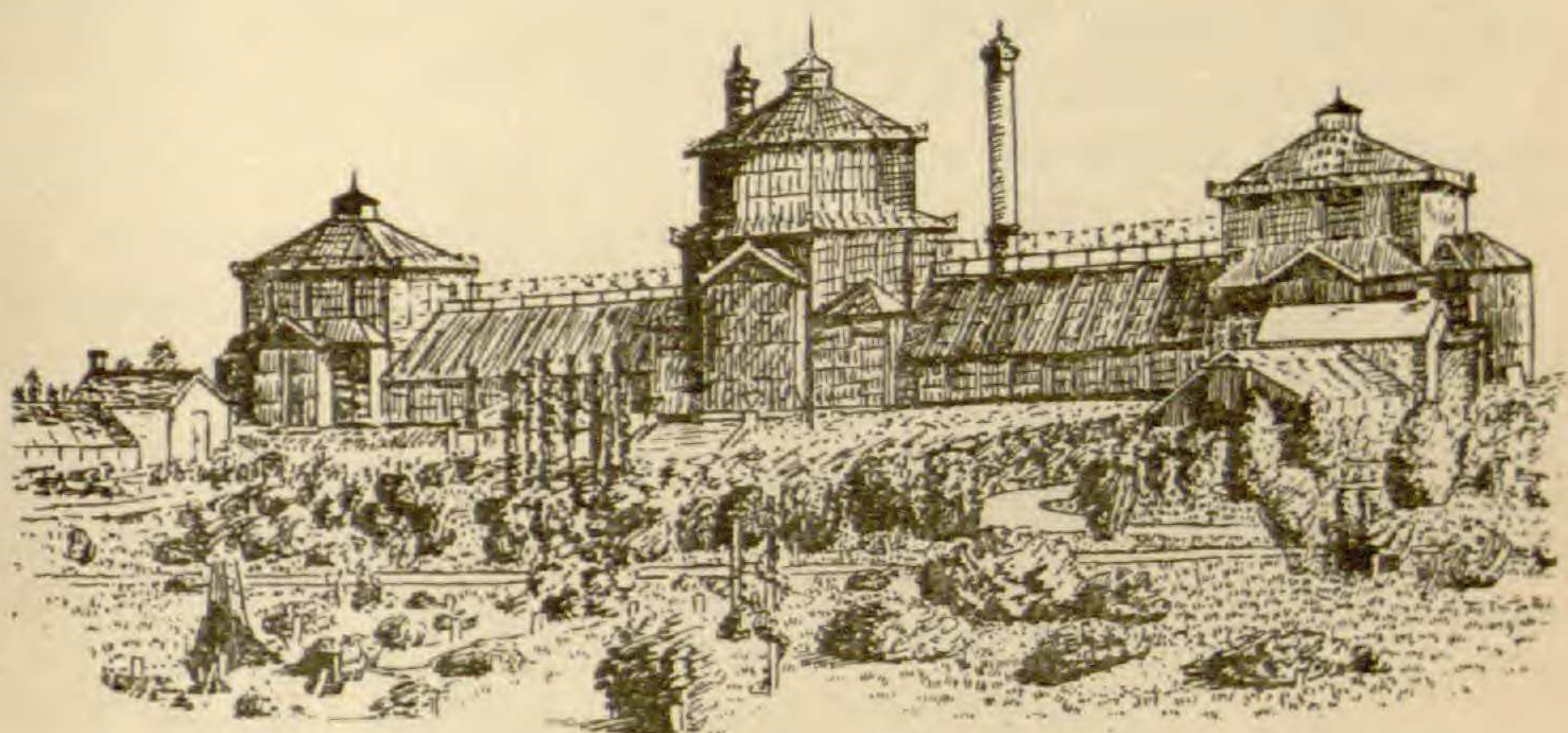
In the "Lehrsammlung" are numerous beautiful preparations, some made by de Bary, and at once recognizable as the originals of well-known figures in his published works; and some by former pupils, some of whom are now famous men. These preparations are frequently used in illustrating the lectures, all of which were held late in the afternoon or in the evening.

The herbarium collection is not relatively large, and is situated, it will be observed, rather remote from the other rooms. Had de Bary been a systematist, he would no doubt have placed his herbarium centrally. Instead, the large laboratories, the rooms which have seen so many distinguished investigators, and witnessed so many scientific discoveries under the guidance of the great director, are the rooms around which the others are clustered.

The library, stocked with a fairly good number of the important serials, together with a few standard works in the principal departments of botany, is placed nearer the laboratory; and in this, every Monday evening, meets the "Botanical Colloquium," made up of the advanced students of the laboratory and the instructors. Certain members give carefully prepared abstracts and reviews of the current botanical literature, which are followed by spirited discussions. After an hour or more of arduous and profitable labor of this kind, by means of which each member is enabled to keep quite abreast of advanced lines of work, they adjourn to a more convivial place and spend the remainder of the evening in the relaxation natural to the German. By eleven o'clock all their vast learning, and especially the hard facts of the recent Colloquium, are in a state of saturated solution, and by next morning are quite ready for use.

The foreigner who has attended a German university

always recalls the university town with feelings of decided pleasure. The quaintness and character of most of these towns, especially in South Germany, furnish a pictorial setting to his experience and work that is wholly new to him. Strassburg, a city of about 115,000 people, has an individuality greater than most cities. From its strategical importance it has been much fought over, and a variety of ownership has given it a mixed population and a mixed language. One sees on its narrow streets the dark complexion and regular, handsome features of the Frank combined with the strong frame of the German, and hears both languages spoken by the same person with equal fluency. And the



LARGE GREENHOUSE IN BOTANIC GARDEN.

peasant on the country road or in the market, and the blue capped and cloaked school-boy on the street, shout their Alsatian *patois*—neither French nor German—in the sing-song, cheery tones peculiar to the people of the Upper Rhine valley. It is the strongest fortress in Germany, and the presence of a garrison of 12,000 gives it a lively military aspect. Goethe took his degree in the university, studied here with Herder, Lenz, Lavater and Stilling, and the bryologist Schimper was long a professor here. Indeed, when one reverts to the numerous associations connected with every ancient street and square, and with many of the houses whose steep, tiled and chimneyed roofs and rich wood-carving date back two to four centuries, and especially when he recalls that most attractive of the old Gothic cathedrals and the scenes witnessed in and around it, he can readily appreciate the loyalty the exiled Strassburger is always said to feel.

Strassburg.